



ENGINEERING INVESTIGATION REPORT

STEPHANIE AND MICHAEL WADSWORTH v. WALMART, INC. AND JETSON ELECTRIC BIKES, LLC

Case No.: 2:23-CV-00118
Location: 1620 Highway 374, Green River, Wyoming
Date of Loss: February 1, 2022
AEI Project No.: 15082





Advanced
Engineering
Investigations

www.AEIengineers.com

ENGINEERING INVESTIGATION REPORT

STEPHANIE AND MICHAEL WADSWORTH v. WALMART, INC. AND JETSON ELECTRIC BIKES, LLC

Case Number: 2:23-CV-00118

Location: 1620 Highway 374, Green River, Wyoming

Date of Loss: February 1, 2022

AEI Project No.:15082

Report Prepared for:

McCoy Leavitt Laskey, LLC

Eugene LaFlamme

N19 W24200 Riverwood Drive, #125

Waukesha, WI 53188

Submitted by:

AEI Corporation



Brian N. Strandjord, PE, CFI, CFEI

Senior Project Engineer

brian@AEIengineers.com

Licensed in CA, CO, FL, HI, ID, KS, KY, MT, ND, NE, NM, NY, SD, UT, WY

September 13, 2024

Date

This statement and its contents are the Work Product of AEI Corporation. This report should only be duplicated or distributed in its entirety. This report may contain confidential or court protected information; please contact an authorized entity prior to distributing.

Copyright AEI Corporation© 2024 - All Rights Reserved



Advanced
Engineering
Investigations
www.AEIengineers.com

TABLE OF CONTENTS

INTRODUCTION	4
BACKGROUND	4
INVESTIGATION TASKS	6
REVIEWED ITEMS.....	6
SITE INSPECTIONS AND LABORATORY EXAMINATION	7
Site inspection, May 18, 2022	7
Site inspection, August 2 & 3, 2022.....	7
Laboratory Examination, October 30 & 31, 2023	15
DISCUSSION	23
CONCLUSIONS.....	25
ATTACHMENTS	26

Eugene LaFlamme
September 13, 2024
AEI P/N:15082
Page 4 of 26



INTRODUCTION

On February 1, 2022, at approximately 4:00 a.m., a fire was discovered at the Wadsworth residence located at 1620 Highway 374, Green River, Wyoming (Residence). Stephanie Wadsworth and her four children ages 4, 8, 9, and 13 years were in the Residence at the time the fire was discovered. AEI Corporation (AEI) was retained by McCoy Leavitt Laskey, LLC. to examine the electrical system at the Residence as it related to the fire. This report outlines this writer's findings to date.

BACKGROUND

The Residence was a single-story, four-bedroom, two-bath, detached, single-family residence with an attached garage. The structure was a conventional wood frame design clad in a combination of stone veneer and aluminum siding. The interior walls of the Residence were constructed of wood paneling rather than sheetrock. Figure 1 is a floorplan sketch shared during the joint site inspection. The sketch identifies the Residence as facing north; however, it was agreed amongst the participants of the joint site inspection that for investigative purposes the front of the Residence faced east.

Eugene LaFlamme
September 13, 2024
AEI P/N:15082
Page 5 of 26

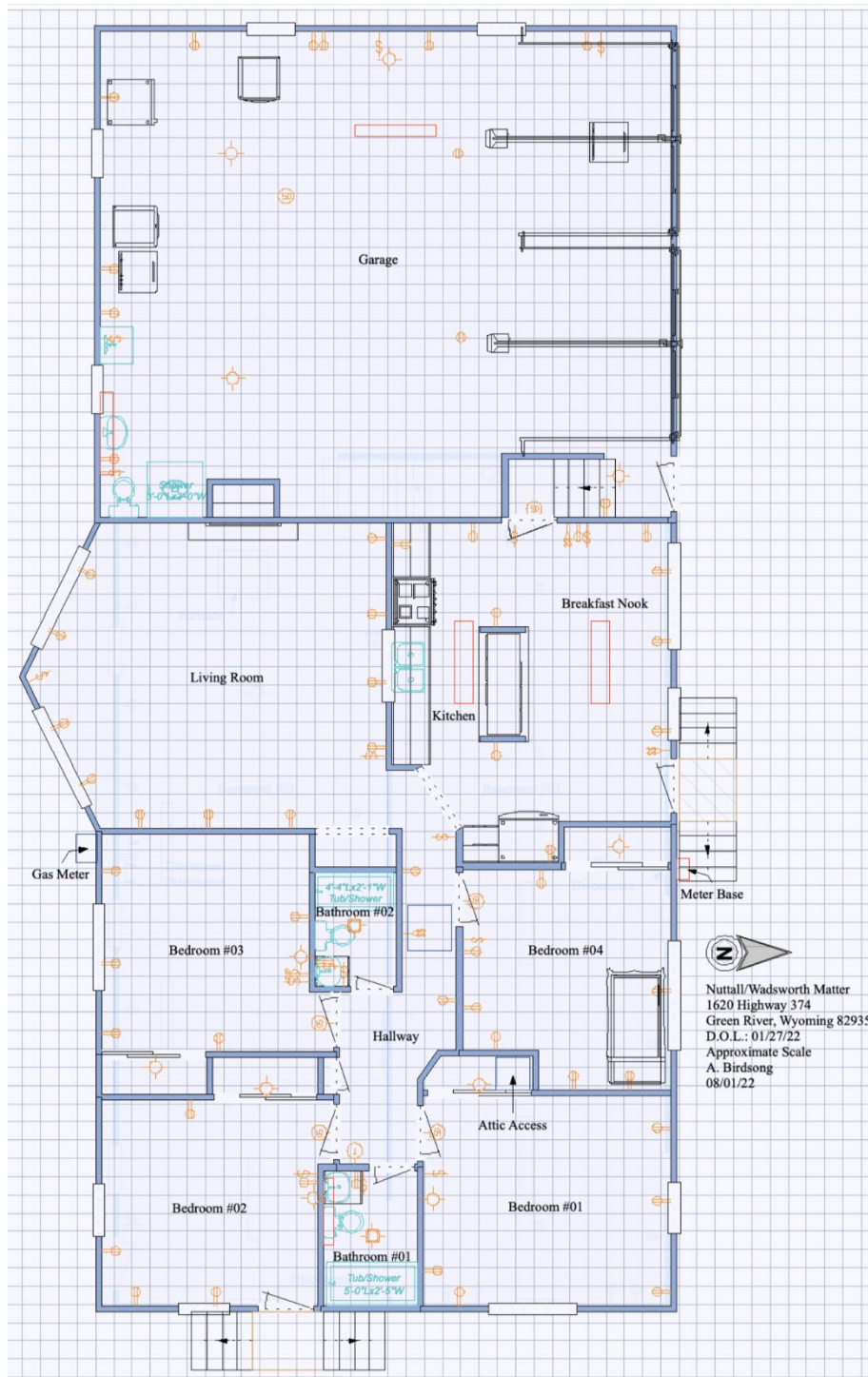


Figure 1. Floorplan of the Residence prepared by Adam Birdsong and shared during the joint inspection.

Eugene LaFlamme
September 13, 2024
AEI P/N:15082
Page 6 of 26



The Wadsworth children had a battery operated hoverboard toy which was reportedly left along the north wall of the “northwest” bedroom (Bedroom #4 in Figure 1) on the night of the fire. An outdoor enclosed polymer drum spill containment pallet was located to the south of the front porch located on the east exterior of the Residence (to the right of Bedroom #4 in Figure 1). Stephanie and Michael Wadsworth reportedly used the outdoor enclosed polymer drum spill containment pallet as a cigarette smoking shed during periods of cold weather (Smoking Shed).

INVESTIGATION TASKS

The following tasks were performed by AEI during the course of the investigation:

1. Inspected the property on May 18, and August 2 and 3, 2022.
2. Examined the preserved artifacts at the Palmer Engineering facility in North Salt Lake, Utah on October 30 and 31, 2023.
3. Reviewed the below listed items.

REVIEWED ITEMS

The following items were reviewed in whole or in part by AEI during the course of the investigation:

1. Report of Forensic Investigation and Analysis, dated July 15, 2024, by Michael J. Schultz.
2. Expert Report in Reference to; Wadsworth v. Jetson et al., dated July 12, 2024, by Derek King.
3. Sweetwater County Sheriff’s Office Incident Report for Incident # S22-01535.
4. Photographs, audio, and video files from the Sweetwater County Sheriff’s Office.
5. A Matterport scan of the Residence from M. J. Schulz & Associates, Inc.
6. A transcript of the November, 15, 2023, deposition of Ryan Pasborg.
7. A transcript of the November 15, 2023, deposition of Bill Robinson.
8. A transcript of the November 16, 2023, deposition of Jeff Sheaman.
9. A transcript of the November 17, 2023, deposition of Larry Erdmann.
10. A transcript of the January 29, 2024, deposition of John Hansen.
11. A transcript of the January 29, 2024, deposition of Richard Kaumo.
12. A transcript of the January 31, 2024, deposition of Jacob Keith Ribordy.

Eugene LaFlamme
September 13, 2024
AEI P/N:15082
Page 7 of 26



13. A transcript of the January 31, 2024, deposition of Ashley Merrell.
14. A transcript of the February 2, 2024, deposition of JP Apostolope.
15. A transcript of the February 26, 2024, deposition of Matthew Wadsworth.
16. A transcript of the February 27, 2024, deposition of Stephanie Wadsworth.
17. A transcript of the May 20, 2024, deposition of Gunner Wadsworth.
18. A transcript of the May 20, 2024, deposition of Layne Wadsworth.
19. A transcript of the May 20, 2024, deposition of Kamille Wadsworth.
20. ATF Fire Research Laboratory Technical Bulletin 001 - Visual Characteristics of Fire Melting on Copper Conductors, dated September 28, 2012.
21. NFPA 921, *Guide for Fire and Explosion Investigations*, 2021 Edition.

SITE INSPECTIONS AND LABORATORY EXAMINATION

Site inspection, May 18, 2022

It was determined during the May 18, 2022, joint site inspection that additional parties should be placed on notice of this fire loss. As a result, the inspection consisted of a brief, non-destructive inspection of the Residence prior to the suspension of the investigation.

Site inspection, August 2 & 3, 2022

The joint site inspection was continued on August 2 and 3, 2022, with additional parties represented. Electrical service to the Residence was provided via an overhead service triplex from a utility pole located to the southeast of the Residence to a weatherhead and meter base located just south of the front door on the east exposure. The service triplex was severed several feet prior to where it connected to the weatherhead (Figure 2). The severed ends of the aluminum conductors comprising the service triplex had been melted. The weatherhead was located to the north of the remnants of the Smoking Shed and adjacent to an area of the roof that was consumed in the fire; however, there was no direct fire damage to the weatherhead or the meter base. In its installed position, the service triplex would have ran directly over the Smoking Shed.

Eugene LaFlamme
September 13, 2024
AEI P/N:15082
Page 8 of 26



Figure 2. Weatherhead and severed service triplex (15082 BNS 2-221).

The main electrical panel was located in the basement below the meter base. There was no direct fire damage to the main panel or the area of the basement in which it was installed. A single-pole, 15-ampere, branch circuit breaker in position 1 (labeled “North west Bedroom”) in the main panel fed the receptacles and luminaires in Bedroom #4. A two-pole, 30-ampere, branch circuit breaker installed in positions 16 and 18 (labeled “Outside Porch Power”) in the main panel fed a NEMA 10-50R receptacle and a duplex NEMA 5-15R receptacle on the east exterior of the Residence via an 8/3 SO cord (Figure 3).

Eugene LaFlamme
September 13, 2024
AEI P/N:15082
Page 9 of 26



Figure 3. A NEMA 10-50R receptacle and a duplex NEMA 5-15R receptacle on the east exterior of the Residence. Two extension cords are plugged into the duplex receptacle (15082 BNS 1-032).

Both the main circuit breaker and all of the branch circuit breakers were standard thermal-magnetic circuit breakers without ground fault circuit interruption (GFCI) or arc fault circuit interruption (AFCI) capability. All of the circuit breakers in the main panel were in the 'ON' position (Figure 4). No circuit breakers were found in the tripped position; however, during removal from the main panel the circuit breaker in position 1 was accidentally dropped which caused it to trip.

Eugene LaFlamme
 September 13, 2024
 AEI P/N:15082
 Page 10 of 26



Figure 4. Main electrical panel (15082 BNS 1-125).

An electrical sub-panel was present on the west interior wall of the basement (Figure 5). The panel was not fire damaged and was labeled as serving areas of the Residence that were not fire damaged. The sub-panel was not preserved for further examination.

Eugene LaFlamme
September 13, 2024
AEI P/N:15082
Page 11 of 26



Figure 5. Electrical sub-panel (15082 BNS 1-099).

Two extension cords (one orange and one yellow in color) were plugged into the duplex receptacle on the east exterior of the Residence. The yellow extension cord ran to a metal post approximately 20 feet to the east of the Residence where it was connected to a splitter. Plugged into the splitter was a cord leading to an electrical box mounted on the post, a shore power cord for a camper trailer parked near the post and a second yellow extension cord which fed a bird bath de-icer in a polymer barrel of water located to the south of the remnants of the Smoking Shed on the east exterior of the Residence. The orange extension cord ran to the melted and resolidified mass of polymer in the location where the Smoking Shed once stood. Fragments of stranded copper conductors were present in and around the remnants of the Smoking Shed, some displaying visual evidence of electrical arcing (Figure 6). The remnants of the Smoking Shed and surrounding debris were preserved for further examination.

Eugene LaFlamme
September 13, 2024
AEI P/N:15082
Page 12 of 26



Figure 6. Evidence of electrical arcing on conductor found outside structure at Smoking Shed (15082 BNS 3-006).

The entire branch circuit from within Bedroom #4 was traced and preserved for further examination. The branch circuit that supplied power to Bedroom #4 was split into two separate non-metallic (NM) cables in the basement of the Residence. These two NM cables were marked with red and blue paint respectively at the locations where they were cut in the basement of the Residence during the collection of artifacts during the joint scene inspection. The NM cable marked with blue paint fed the northern portion of Bedroom #4 and the NM cable marked with red paint fed the southern portion of the room. The duplex receptacles in Bedroom #4 were designated R1 through R9 during the joint site inspection prior to removal from the structure (Figure 7).

Eugene LaFlamme
 September 13, 2024
 AEI P/N:15082
 Page 13 of 26

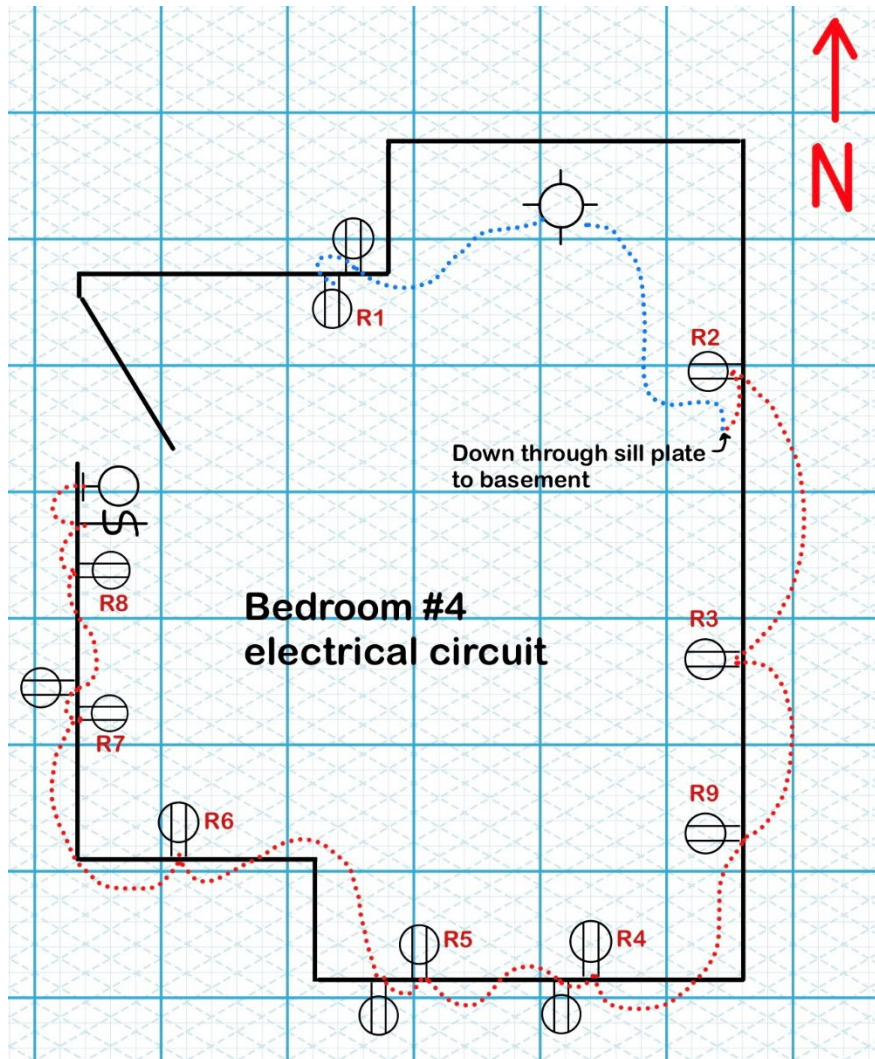


Figure 7. Diagram of the electrical branch circuit in Bedroom #4.

The red painted NM cable ran up through the sill plate from the basement into Bedroom #4 where it connected to R2. The electrical insulation on the NM cable was largely intact in this segment of the branch circuit with some discoloration and charring of the cable jacket. The NM cable connecting R2 to R3 was entirely consumed by the fire along several feet of the cable with the remaining portion of the segment charred. Most of the insulation on the segment of the branch cable between R3 and R9 was entirely consumed by the fire. While some portions of the NM cable between R9 and R4 contained intact insulation, the insulation on several feet of the segment were entirely consumed by the fire. The branch circuit continued from R4 to a duplex receptacle for an adjacent room (Bedroom #1), then to R5, and to another duplex receptacle for an adjacent room (Bedroom #1). This segment of NM cable contained intact insulation. The circuit continued to R6 with mostly intact but charred insulation of the NM cable. From

Eugene LaFlamme
September 13, 2024
AEI P/N:15082
Page 14 of 26



R6 to R7 the insulation on the NM cable was entirely consumed by the fire over several feet of its length. The branch circuit continued from R7 to another duplex receptacle from an adjacent room (hallway), with intact insulation. The NM cable continued to R8, a wall switch, and a wall sconce all located next to the door to Bedroom #4. The insulation on this last section of the NM cable was almost entirely consumed by the fire.

The blue painted NM cable ran up through the sill plate from the basement into Bedroom #4 near the location of the red painted NM cable. The blue painted NM cable ran to a ceiling mounted luminaire in the closet of Bedroom #4, then to a duplex receptacle in an adjacent room (kitchen, refrigerator receptacle), and then to R1. The insulation on this section of the branch circuit was entirely consumed by the fire. The power cord from the refrigerator in the kitchen was still plugged into its receptacle, there were no conductors plugged into receptacle R1 (Figure 8). The subject hoverboard was reportedly found on the floor in the area of receptacle R1.



Figure 8. Power cord for refrigerator plugged into receptacle (red arrow), and receptacle R1 with no cords plugged in (yellow arrow) (15082 BNS 4-035).

Eugene LaFlamme
 September 13, 2024
 AEI P/N:15082
 Page 15 of 26

Laboratory Examination, October 30 & 31, 2023

A laboratory examination of the artifacts preserved from the fire scene was conducted at the Palmer Engineering and Forensics facility in North Salt Lake City, Utah on October 30 and 31, 2023. Debris collected from the exterior of the Residence in the area of the Smoking Shed including the mass of melted and resolidified polymer that remained of the Smoking Shed was examined. Numerous stranded copper conductor fragments were found that contained evidence of electrical arcing (Figure 9).



Figure 9. Some of the instances of evidence of electrical arcing on conductors found in or around the Smoking Shed (15082 BNS 7-014, 7-106, 7-045, 7-066).

The power cord for bird bath de-icer and the yellow jacketed extension cord it was plugged into were both thermally damaged in the area where the cords were located near the Smoking Shed. The body of the bird bath de-icer was intact and not fire damaged (Figure 10). There was no evidence of a failure of the bird bath de-icer.

Eugene LaFlamme
September 13, 2024
AEI P/N:15082
Page 16 of 26



Figure 10. Bird bath de-icer not fire damaged (15082 BNS 5-054).

The 50-ampere and duplex 20-ampere receptacle from the east exterior of the Residence were opened for examination. The 50-ampere receptacle was fed by an 8-gauge, 3 conductor (8/3), type SO cord from a two-pole, 30-ampere, branch circuit breaker in the main panel. The duplex 20-ampere receptacle was fed by smaller gauge conductors tapped into the screw terminals on the 50-ampere receptacle. The grounding tab on the duplex receptacle was wired to the metal switch box that housed the receptacle and an uninsulated stranded conductor exited the switch box through a drilled hole. The other end of the uninsulated conductor had been bolted to a metal conduit connected to the meter base at the Residence. Neither of the receptacles were fire damaged. Two extension cords, a (second) yellow jacketed cord, and an orange jacketed cord were plugged into the duplex receptacle (Figure 11). The extension cord jackets and the plug ends were thermally damaged from the outside. There was no evidence of a failure at the receptacles.

Eugene LaFlamme
September 13, 2024
AEI P/N:15082
Page 17 of 26

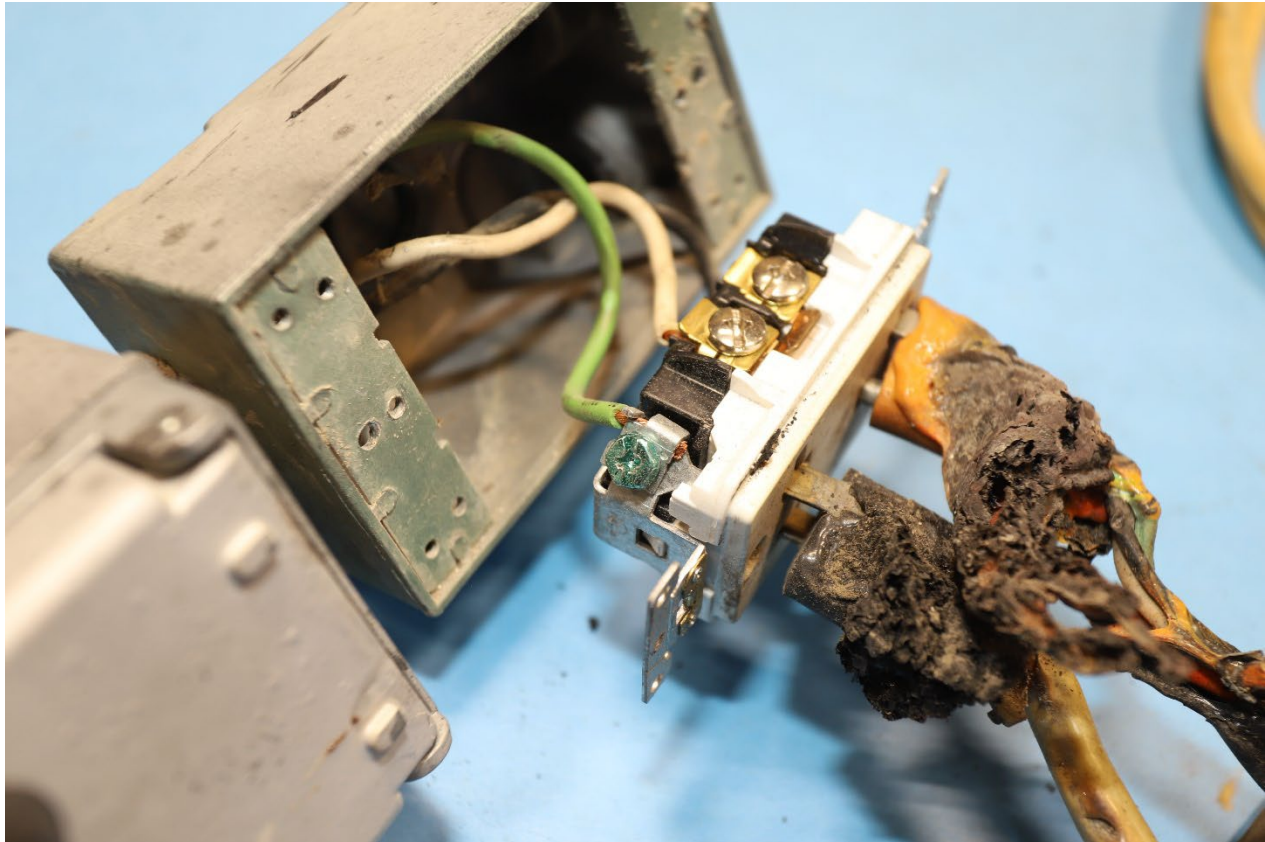


Figure 11. Two extension cords plugged into the duplex receptacle on the east exterior of the Residence (15082 BNS 5-099).

The weatherhead and remnants of the service triplex were examined (Figure 12). The weatherhead was not fire damaged. Thermal damage was present on the insulation on the individual service entrance conductors near the connections to the service triplex conductors. The service triplex conductors were melted and severed several feet from the connection point to the service entrance conductors to the Residence in the area that would have been overhead of the location of the Smoking Shed.

Eugene LaFlamme
September 13, 2024
AEI P/N:15082
Page 18 of 26



Figure 12. Weatherhead not fire damaged (15082 BNS 5-266).

A number of miscellaneous fire damaged electronic components from the area of the Smoking Shed were examined. This included the remnants of a cell phone and a disassembled vape pen. All of the other components were consistent with those found in typical consumer electronic devices. There was no evidence of a fire causing electrical failure in any of the components. Three loose plug blades, including a matching pair consistent with those of a small USB power supply and a single blade from another device recovered from the area of the Smoking Shed were examined. There was no evidence of electrical arcing on the plug blades.

A three-position power tap from the end of an extension cord with two plug blades present in one of the positions recovered from the area of the Smoking Shed was examined (Figure 13). There was no evidence of electrical arcing at the plug connections nor any other evidence of a failure of the connections. The stranded copper conductors of the power tap were mechanically fractured several inches from the receptacle.

Eugene LaFlamme
September 13, 2024
AEI P/N:15082
Page 19 of 26



Figure 13. Three position power tap from the end of an extension cord with two plug blades from an unknown device still attached (15082 BNS 5-129).

The fire damaged remnants of a fire damaged electric space heater found in the area of the Smoking Shed were externally examined (Figure 14). The conductors of the power cord were fractured at the location where they entered the body of the heater. A melted and resolidified mass of polymer filled the air outlet of the space heater. No destructive examination of the space heater was performed.

Eugene LaFlamme
September 13, 2024
AEI P/N:15082
Page 20 of 26



Figure 14. Fire damaged space heater (15082 BNS 5-129).

The refrigerator from the Residence was examined. The refrigerator was installed along the south wall of the kitchen on the opposite side of the Bedroom #4 wall where a hoverboard was reportedly found. The damage to the refrigerator was consistent with attack by an external fire. There was no evidence of a fire originating in the refrigerator (Figure 15)

Eugene LaFlamme
September 13, 2024
AEI P/N:15082
Page 21 of 26



Figure 15. Refrigerator compressor and condensing coil (15082 BNS 6-088).

The two-pole, 30-ampere branch circuit breaker that supplied the exterior receptacles and the single-pole 15-ampere branch circuit breaker that supplied the receptacles and luminaires in Bedroom #4 were visually examined. Neither of the branch circuit breakers were fire damaged and neither contained any external evidence of a failure. The branch circuit breakers were not electrically tested or disassembled.

The entire branch circuit from within Bedroom #4 was examined (Figures 16 and 17). Despite much of the electrical insulation on the branch circuit conductors having been consumed by the fire, there was no evidence of electrical arcing on any of the conductors installed in Bedroom #4.

Eugene LaFlamme
September 13, 2024
AEI P/N:15082
Page 22 of 26



Figure 16. Branch circuit from southern portion of Bedroom #4 (15082 BNS 6-133).

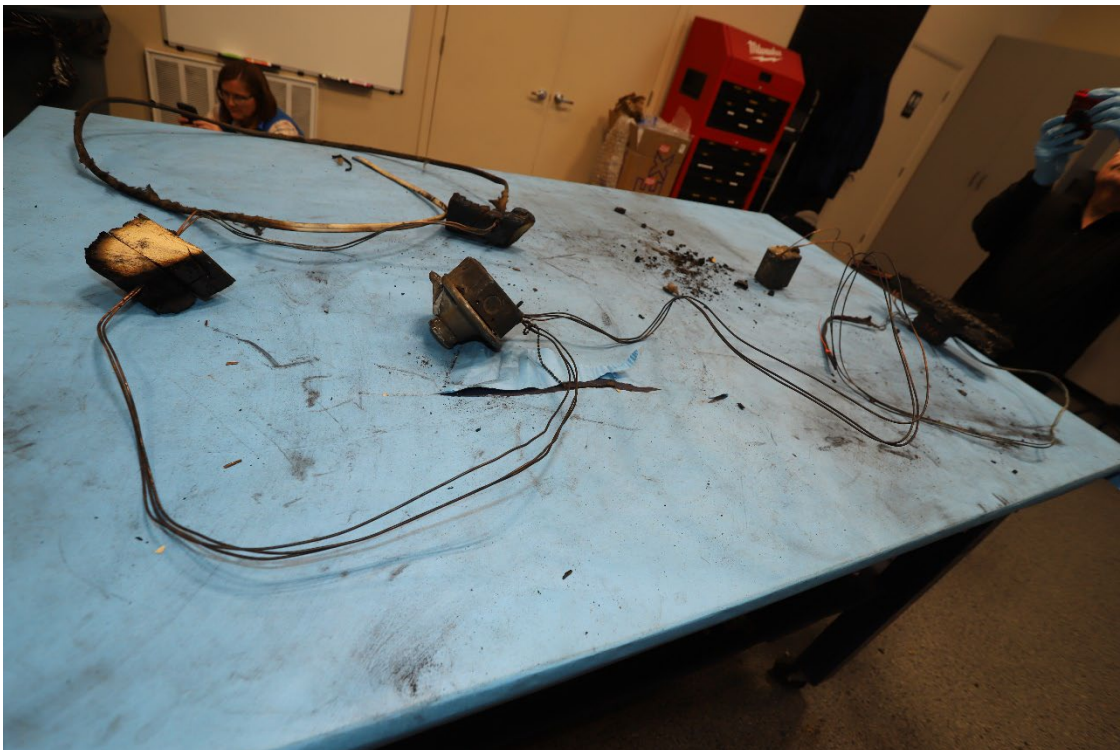


Figure 17. Branch circuit from northern portion of Bedroom #4 (15082 BNS 6-215).

DISCUSSION

Arc mapping is defined in the National Fire Protection Association (NFPA) 921, *Guide for Fire and Explosion Investigations*, 2021 edition as: *Identifying and documenting a fire pattern derived from the identification of arc sites used to aid in determining the area of fire origin or spread.* In practice, the process of arc mapping consists of identifying and documenting the locations of all, or as much as possible, of the branch circuit conductors, and electrical power cords within an area of interest and the locations of any evidence of electrical arcing on those conductors. The presence, or lack of, evidence of electrical arcing on the conductors can provide evidence of the state of the conductors (energized vs. non-energized) when they were exposed to the fire and can also provide evidence of the direction that the fire spread across the area where the conductors were installed.

Section 9.10.3 of NFPA 921 describes *Arcing Through a Carbonized Path Due to Thermal Means (Arcing Through Char)* and cited the effects noted in studies performed on energized, polyvinylchloride (PVC) insulated, NM cables. NM cable is the type of branch circuit conductor commonly used in residential construction. Thermoplastic polymer electrical insulation on electrical conductors will, when exposed to sufficiently high temperatures such as from a fire, melt and/or char. The thermoplastic polymer insulation on the conductors is normally an electrical insulator; however, when the polymer chars it becomes an electrical conductor and can allow current to flow between the conductors contained within the NM cable. The low resistance path through the charred insulation allows electrical arcing to occur between the conductors within the charred NM cable. This electrical arcing will leave physical evidence in the form of highly localized melting of the conductors and may or may not be of sufficient magnitude and duration to cause the circuit protection (circuit breaker) to operate.

Whether a particular instance of electrical arcing on a conductor is evidence of a fire cause or evidence of fire attacking the energized conductor, evidence of electrical arcing on a conductor is evidence that the conductor was energized at the time the arcing occurred. Electrical arcing will not occur on an unenergized conductor as there is no electrical energy present. A fault such as arcing through charred insulation on a copper conductor energized with typical residential utilization voltage (nominally 120 volts) will leave evidence of the electrical fault in the form of highly localized melting of the copper conductor(s) with clear demarcation between melted and un-melted portions of the conductor(s) amongst other traits, that are visually apparent and distinctly different from a unenergized copper conductor that was melted by a less localized heat source (fire attack). Midspan (not at an end or junction point) arcing in an insulated branch circuit conductor without any evidence of any pre-fire mechanical damage to the conductor or its insulation is consistent with evidence of electrical arcing through char due to fire attack while the conductor was energized. It would be normal and expected to find some evidence of electrical arcing in the energized branch circuit conductors installed in a structure where a fire occurred and compromised the electrical insulation on the conductors.

Eugene LaFlamme
September 13, 2024
AEI P/N:15082
Page 24 of 26



In the subject fire, stranded copper conductors present in the Smoking Shed, either extension cords or appliance (space heater) cords, or both, displayed evidence of electrical arcing proving that those cords were energized at the time that fire was present in the Smoking Shed. The entire branch circuit that supplied power to the receptacles and luminaires in Bedroom #4; however, contained no evidence of electrical arcing despite the electrical insulation being completely burned away on portions of the circuit. The insulation on the branch circuit wiring to the receptacle immediately adjacent to the location where the hoverboard was found was completely consumed in the fire; however, there was no evidence of electrical arcing on these conductors. The lack of any evidence of electrical arcing occurring in the fire damaged branch circuit conductors located in Bedroom #4 and the lack of any tripped circuit breakers in the electrical panel for the Residence (including the branch circuit breaker for Bedroom #4) was consistent with the branch circuit supplying power to Bedroom #4 being de-energized at the time that the fire attacked the branch circuit conductors in the bedroom.

The 20-ampere, duplex receptacle on the east exterior of the Residence was tapped off of a 30-ampere branch circuit. The extension cords plugged into the duplex receptacle that ran to the Smoking Shed were a combined length of approximately 50 feet or more in length and constructed of stranded copper conductors that were far smaller than required for service on a 30-ampere branch circuit. The overcurrent resulting from electrical arcing at or near the far end of those long, smaller conductors would be limited by the impedance of the circuit and the 30-ampere branch circuit breaker could not be expected to reliably trip when that arcing occurred.

The aluminum conductors of the service triplex supplying electrical power to the Residence were melted and severed during the fire in the area where the service triplex ran directly overhead of the Smoking Shed. Copper electrical conductors are composed of essentially pure copper which has a melting temperature of approximately 1,983 °F. Aluminum electrical conductors used to construct a service triplex are typically composed of an aluminum alloy which has a melting temperature of approximately 1,200 °F. Unlike copper conductors which often survive a structure fire, aluminum conductors such as the subject service triplex will often melt when exposed to a fire due to the lower melting temperature of aluminum. When the aluminum service triplex conductors were severed by the fire, the entire electrical system in the Residence was de-energized. This included all of the branch circuits within the Residence and all of the extension cords plugged into the duplex receptacle on the exterior of the Residence.

Evidence of electrical arcing on the conductors in the Smoking Shed proved that those conductors were energized when they were attacked by fire. The conductors would only be energized prior to the time that the fire melted and severed the service triplex to the Residence; therefore, fire was present in the Smoking Shed prior to the time that the service triplex conductors were melted and severed by the fire. The absence of any evidence of electrical arcing in the fire damaged branch circuit conductors in Bedroom #4 and the absence of any tripped circuit breakers in the electrical panel for the Residence was consistent with those

Eugene LaFlamme
September 13, 2024
AEI P/N:15082
Page 25 of 26



circuits inside the Residence being de-energized at the time they were attacked by the fire. The branch circuits in the Residence would be de-energized after the service triplex conductors were melted and severed. The sequence of events consistent with the physical evidence presented by the electrical system was a fire present at or in the Smoking Shed which attacked the energized, stranded copper, power cords in the Smoking Shed causing arcing to occur there, the fire then melted and severed the aluminum conductors of the service triplex located above the Smoking Shed disconnecting the electrical service from the Residence, as the fire spread to the interior of the Residence and attacked the de-energized branch circuit conductors no electrical arcing occurred on those conductors as there was no longer any electrical energy present.

In contrast, had a fire attacked and compromised the electrical insulation on the energized branch circuit conductors within Bedroom #4 prior to the fire melting and severing the service triplex conductors, it would be expected to find evidence of electrical arcing on the branch circuit conductors and/or tripped branch circuit breakers in the main electrical panel. Had a fire inside the Residence breached the Bedroom #4 window and/or roof and spread to the Smoking Shed, the fire would have been present in the area of the service triplex (above the Smoking Shed) prior to the time that fire was present at the conductors that contained evidence of electrical arcing (near the ground). Had the service triplex been melted and severed by the fire prior to the fire reaching the electrical cords at or near the bottom of the Smoking Shed, those conductors would no longer be energized and there would be no evidence of electrical arcing on them. The physical evidence was not consistent with a fire first being present within the Residence and spreading outside to the Smoking Shed.

CONCLUSIONS

The results of the investigation conducted by AEI indicate the following:

1. Evidence of electrical arcing was present on conductors located within the polymer Smoking Shed adjacent to the Residence.
2. There was no evidence of electrical arcing on conductors located within the Residence.
3. The physical evidence presented by the electrical system at the Residence was consistent with:
 - a. Fire being present at or within the polymer Smoking Shed prior to the time that the fire severed the overhead service triplex to the Residence.
 - b. The overhead service triplex being severed by the fire prior to the time that the fire attacked the branch circuit wiring within Bedroom #4 of the Residence.
4. The physical evidence presented by the electrical system at the Residence was not consistent with a fire originating within the Residence.

Eugene LaFlamme
September 13, 2024
AEI P/N:15082
Page 26 of 26



The opinions expressed in this report are based upon this writer's education, training, and work experience. The opinions are also based upon a reasonable degree of scientific and engineering certainty and the information available to this writer at the time the report was authored. This writer reserves the right to modify and/or supplement these opinions should new information become available. The investigation, methodology, analysis, findings, conclusions, and opinions detailed in this report are consistent with, and based upon, the recognized and accepted standards and practices of physical component failure investigation and fire and explosion investigation including, but not limited to, applicable sections of ASTM Standards: E 620, E 678, E 860, and E 2332, and the 2021 Edition of National Fire Protection Association (NFPA) 921, *Guide for Fire and Explosion Investigations*.

ATTACHMENTS

This writer's resume and four-year testimony record are attached. This writer charges \$350 per hour for consulting time and \$525 per hour for testimony time.



Advanced Engineering Investigations

**Advanced
Engineering
Investigations**
www.AEIengineers.com

BRIAN N. STRANDJORD, PE, CFI, CFEI

Senior Project Engineer

brian@AEIengineers.com

Mr. Strandjord is a licensed mechanical and electrical professional engineer with an extensive and diverse background. He investigates the origin and cause of fires and explosions, carbon monoxide incidents, and other mechanical and electrical matters. His experience ranges from thermal analysis of individual electronic components and assemblies to the design, implementation, and operation of automation systems for control of HVAC, mechanical, and lighting systems in large facilities. Mr. Strandjord's background also includes extensive, hands-on fabrication and welding experience, including production of commercial and military aircraft components.



EDUCATION

Bachelor of Science in Mechanical Engineering, University of Colorado, 2005

AREAS OF EXPERTISE

Mechanical and Electrical Engineering
Fire/Explosion Origin & Cause Investigation
Carbon Monoxide Incident Investigation

CERTIFICATION & LICENSURE

Licensed Professional Engineer in California, Colorado, Florida, Hawaii, Idaho, Kansas, Kentucky, Montana, Nebraska, New Mexico, New York, North Dakota, South Dakota, Utah, and Wyoming
Certified Fire and Explosion Investigator (CFEI), National Association of Fire Investigators (NAFI)
Certified Fire Investigator (CFI), International Association of Arson Investigators (IAAI)
Certified Level 1 Infrared Thermographer
Certified Weigher License, Colorado Department of Agriculture
FCC Extra Class Amateur Radio Operators License
FCC General Radio Telephone Operators License (GROL) with Radar Endorsement

WORK HISTORY

Senior Project Engineer, AEI Corporation, 2022-Present
Project Engineer, AEI Corporation, 2019-2022
West Region MEP Division Manager, Rimkus Consulting Group, Inc., 2014-2019
Project Manager, PM Services Company, 2013-2014
Project Engineer II, Trane Company, 2008-2013
Adjunct Faculty Member, Metropolitan State College of Denver, 2007
Aerospace Welder, Stanley Aviation, 2006-2008
Project Engineer, Coretec Denver, Inc., 2004-2005
Mechanical Engineer, Thermal Management, Inc., 2003-2004

EXPERIENCE

Mr. Strandjord has investigated failures in a wide range of mechanical and electrical systems, such as consumer products, lithium battery powered equipment, gas and electric appliances, building systems, commercial and industrial machinery, and electrical switchgear. He has conducted site inspections and laboratory examinations to determine the root cause of machine and device failures ranging from equipment breakdown to catastrophic failures, including fires, explosions, and significant injuries. Mr. Strandjord is also experienced in the investigation of electrical accidents, including shocks and electrocutions. He has provided mechanical and electrical engineering expert witness testimony for matters in both state and federal courts.

AFFILIATIONS

International Association of Arson Investigators (IAAI)
National Association of Fire Investigators (NAFI)



Testimony Record of Brian Strandjord

Four Year Testimony Record

P/N	Date	Depo, Trial, Arb	Case No.	Court	Case Name	PI/Def	Description
	4/26/2019	T	2017CV30056	District Court, Garfield County, Colorado	Tobias Emmanuel Ocegueda and Michelle Charmaine Ocegueda v. JWC Environmental, LLC.	Def	
	6/4/2019	D	CV-2017-105	District Court of the Fourth Judicial District with and for Sheridan County, State of Wyoming	AMCO Insurance Company vs. Winnebago Industries, Inc. and Diesel Machinery, Inc.	Def	
	9/27/2019	D	18-CV-1730-REB-KLM	The United States District Court for the District of Colorado	Philadelphia Indemnity Insurance Company v. Textron Specialized Vehicles, Inc., and Curtis Instruments, Inc.	PI	
14561	3/18/2021	D	2019CV30132	District Court, El Paso County, State of Colorado	Day Lily Sale & Spa, LLC, et al. v. Ron and Danelle Myerle, et al.	Def	FIRE
14373	5/17/2021	D	DV 20-0459	Montana Thirteenth Judicial District Court, Yellowstone County	Estate of Colin James Barton v. Arrow Striping & Manufacturing, Inc., et al.	Def	ELEC
14561	7/6/2021	T	2019CV030132	District Court, El Paso County, State of Colorado	Day Lily Salon & Spa, LLC, et al. v. Why Not Books, LLC, et al.	PI	FIRE
14426	11/3/2021	D	20EV003101	State Court of Fulton County, Georgia	Kiran Yarlagadda v. Rockhaven Homes, LLC et al.	Def	FIRE
12226	12/28/2022	D	BC 503381	Superior Court of California County of Los Angeles - East District	Felipe Mireles, Maria Mireles vs. Phillips 66; Conocophillips; PCF Acquisition CO., LLC; Phillips 66 Company; Conocophillips Company Suburban Propane Partners; 76/Circle K #5695; Field Energy Corporation; TMC Franchise Corporation; Nelson L. Huang; Stephen A. Dakay; and Does 1 through 100. Inclusive	Def	EXPL



Testimony Record of Brian Strandjord

Four Year Testimony Record

P/N	Date	Depo, Trial, Arb	Case No.	Court	Case Name	Pl/Def	Description
12226	2/6/2023	T	BC 503381	Superior Court of California County of Los Angeles - East District	Felipe Mireles, Maria Mireles vs. Phillips 66; Conocophillips; PCF Acquisition CO., LLC; Phillips 66 Company; Conocophillips Company Suburban Propane Partners; 76/Circle K #5695; Field Energy Corporation; TMC Franchise Corporation; Nelson L. Huang; Stephen A. Dakay; and Does 1 through 100. Inclusive	Def	EXPL